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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/584,957

08/01/2007

Oemer Uensal

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2248

23416

7590

11/23/2011

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EXAMINER

FANG, SHANE

ART UNIT

PAPER NUMBER

1766

MAIL DATE

DELIVERY MODE

11/23/2011

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/584,957	<b>Applicant(s)</b> UENSAL ET AL.	
	<b>Examiner</b> SHANE FANG	<b>Art Unit</b> 1766	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 August 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on \_\_\_\_; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 5) ☒ Claim(s) 28-58 is/are pending in the application.
- 5a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 6) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 7) ☐ Claim(s) \_\_\_\_ is/are rejected.
- 8) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 9) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____.                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____.   | 6) <input type="checkbox"/> Other: ____.                          |

### **DETAILED ACTION**

A telephone call was made to Ashley I. Pezzner on 11/07/2011 to request an oral election to the below restriction requirement, but did not result in an election being made.

#### ***Election/Restrictions***

Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claims 28-40, 42-48, and 55-58, a proton-conducting polymer membrane obtained by the process of claim 28

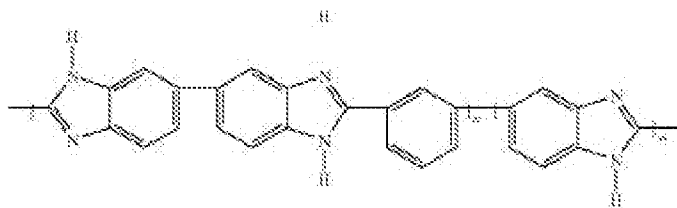
Group II, claim 41, a proton-conducting polymer membrane of Group I further comprising a blended polymer

Group III, claims 49-54, an electrode assembly and a fuel cell comprising the polymer membrane of Group I

The inventions listed as Groups I-III do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the common technical feature in all groups is the polymer membrane of Group I. This element cannot be a special technical feature under PCT Rule 13.2 because the element is shown in the prior art. Uensal et al. (WO 03/092090 listed on ISP, US 20100047669

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used as English equivalent, abs., 68, 101-129 claims 1-11) discloses a membrane of polyazole having the following exemplary structure:



where n and m are each an integer greater than or equal to 10, preferably greater than or equal to 100.

thermoplastic polyazole

and is formed by

{0101} i) preparation of a mixture comprising

{0102} polyphosphoric acid,

{0103} at least one polyazole and/or at least one compound which is suitable for forming polyazoles under the action of heat as described in step ii),

{0104} ii) heating of the mixture obtainable as described in step i) under inert gas to temperatures of up to 400 °C,

{0105} iii) application of a layer to a support using the mixture as described in step i) and/or ii),

{0106} iv) treatment of the membrane formed in step iii).

polyphosphoric acid is a commercial polyphosphoric acid, for example, from Riedel-de Haen. Polyphosphoric acids  $H_{n+1}P_nO_{3n+1}$  (n>1) usually have an assay calculated as  $P_2O_5$  (acidimetric) of at least 83%. Instead of a solution of the monomers, a dispersion/suspension can also be produced.

{0128} The membrane obtained in step iv) can be made self-supporting, i.e. it can be detached from the support without damage and subsequently processed further directly, if appropriate.

{0129} The treatment in step iv) leads to hardening of the coating. If the membrane is formed directly on the electrode, the treatment in step iv) is continued until the coating has a

{0117} The polyphosphoric acid used in step i) is a commercial polyphosphoric acid as is obtainable, for example, from Riedel-de Haen. Polyphosphoric acids  $H_{n+1}P_nO_{3n+1}$  (n>1) usually have an assay calculated as  $P_2O_5$  (acidimetric) of at least 83%. Instead of a solution of the monomers, a dispersion/suspension can also be produced.

The heating temperature is up to 400 °C, a range that sufficiently specific to anticipate the instant claimed range (up to 350 °C) of claim 1. Should the overlapping unsatisfying would render *prima facie* case of non-obviousness.

The difference is claim 1 uses phosphonic acid anhydride vs. Uensal using phosphonic acid. However, claim 1 is a product-by-process claims that are limited by and defined by the product. Determination of patentability is based on the product itself, not on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even

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though the prior product was made by a different process. **In re Thorpe**, 777 F. 2d 695, 698,277 USPQ 964,966 (Fed. Cir. 1985). See MPEP § 2113. In this particular case, phosphonic acid anhydride merely appears to be a dispersion media or solvent according to instant specification (pg.2, 28-32) during the polymerization of forming polyazole. Furthermore, Uensal's polyphosphoric acid would present contributing to strengthening of the membrane by partial hydrolysis (due to moisture treatment) to form low molecular weight polyphosphoric acid and/or phosphoric acid. One of ordinary skill in the art would at once envisage or obviously recognize the claimed phosphonic acid anhydride would hydrolyze to phosphonic acid due to moisture treatment first and further hydrolyze and form low molecular weight polyphosphoric acid and/or phosphoric acid. In light of all these, the polyazole membrane of Uensal would meet the claimed one, the special technical feature, because of the disclosed structure, MW, and composition.

Should Group I elected, the examiner requests further election of 3 species having distinctly different structures of phosphonic anhydride in claim 35

The species are independent or distinct because as disclosed the different species have mutually exclusive characteristics for each identified species because of their distinctly different structures. In addition, these species are not obvious variants of each other based on the current record.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable.

There is an examination and search burden for these patentably distinct species due to their mutually exclusive characteristics, because the species in claim 35 have required a separate status in the art due to their recognized divergent subject matter. The species require a different field of search (e.g., searching different classes/subclasses or electronic resources, or employing different search queries); and/or the prior art applicable to one species would not likely be applicable to another species; and/or the species are likely to raise different non-prior art issues under 35 U.S.C. 101 and/or 35 U.S.C. 112, first paragraph.

**Applicant is advised that the reply to this requirement to be complete must include (i) an election of a species to be examined** even though the requirement may be traversed (37 CFR 1.143) **and (ii) identification of the claims encompassing the elected species**, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

The election of the species may be made with or without traverse. To preserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the election of species requirement, the election shall be treated as an election without traverse. Traversal must be presented at the time of election in order to be considered timely. Failure to timely traverse the requirement will result in the loss of right to petition under 37 CFR 1.144. If claims are added after the election, applicant must indicate which of these claims are readable on the elected species.

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Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the species unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other species.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which depend from or otherwise require all the limitations of an allowable generic claim as provided by 37 CFR 1.141.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Affirmation of this election must be made by applicant in replying to this office action. Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even through the requirement be traversed (37 CFR 1.143).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SHANE FANG whose telephone number is (571)270-7378. The examiner can normally be reached on Mon.-Thurs. 8 a.m. to 6:30 p.m. EST..

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SHANE FANG/  
Examiner, Art Unit 1766